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SAMPLING OF WASTE PIT 4

04-28-91

[redacted]

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

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MAR 2 8 1991

DOE-995-91

Mr. Graham E. Mitchell, DOE Coordinator
Ohio Environmental Protection Agency
40 South Main Street
Dayton, OH 45402

Dear Mr. Mitchell:

SAMPLING OF WASTE PIT 4

Reference: Letter, DOE-102-91, G. W. Westerbeck to R. L. Shank, "Amendment to Waste Pit Four Closure Plan," dated October 19, 1990

In order to collect samples of the materials disposed in Waste Pit Four at the Feed Materials Production Center, three wells are to be installed through the interim cap. The referenced letter was a request for modifications to the closure plan for this waste pit to allow for this work to proceed.

Your assistance is requested in expediting approval for this modification. Enclosed with this request is a description of how the contractor installing these wells, is planning to protect the area of the cap, which must be accessed to accomplish this work.

If you have any questions concerning this request or require additional information, please contact Oba Vincent at (513) 738-6937.

Sincerely,

Jack R. Craig
FMPC Remedial Action
Project Director

DP-84:Vincent

Enclosure: As stated

cc w/encl.:

R. P. Whitfield, EM-40, FORS
K. A. Hayes, EM-424, GTN
J. J. Fiore, EM-42, GTN
C. A. McCord, USEPA-V, 5HR-12
L. August, GeoTrans
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R. L. Glenn, Parsons
W. H. Britton, WMCO
H. F. Daugherty, WMCO
S. W. Coyle, WMCO
S. M. Peterman, WMCO
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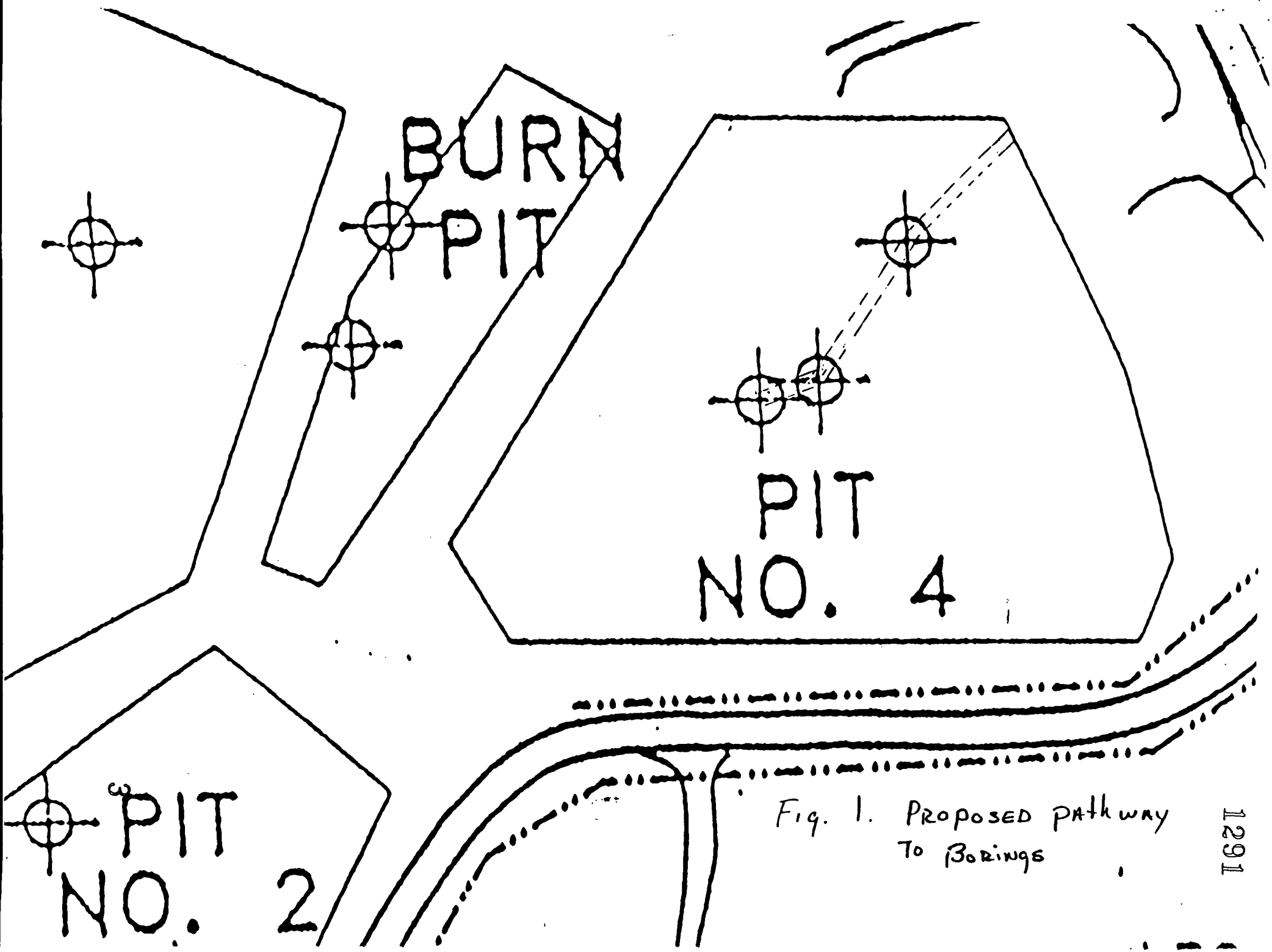

Fig. 1. Proposed pathway
To Borings

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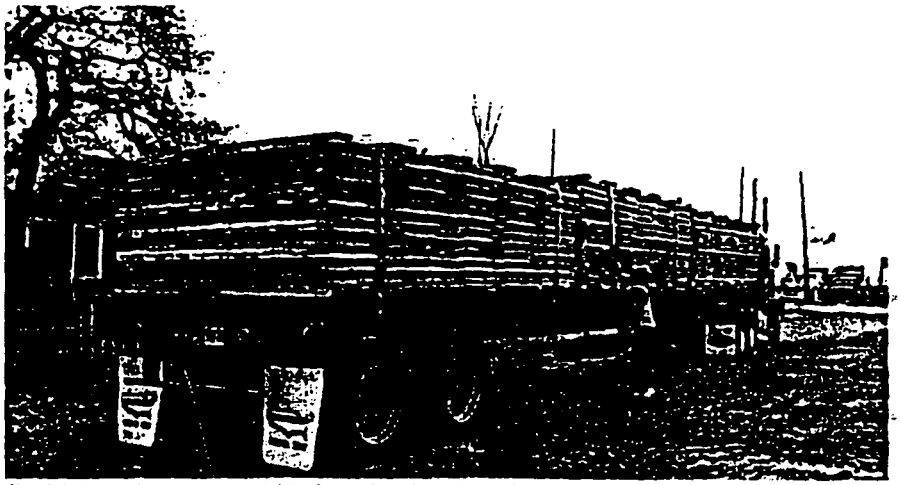
Prefabricated Mats Speed Rig-Site Construction

An interlocking mat system developed for drilling pads and roadways installed over soft terrain reportedly can be put in place by three men and a forklift in 3 days.

This represents a savings of up to a week in construction time as well as a three-fourths reduction in the number of personnel normally required for pad construction. In addition, the short construction time could be beneficial in reducing or avoiding weather delays.

Developed by Uni-Mat International Inc. of Houston, the modular system is based on 8-ft by 14-ft prefabricated mat sections. The basic module of the system consists of four of the mats placed upside down and locked in place with a single mat placed solid side up in the center of the four base mats. The pad then is expanded as far as desired by additions to the top and bottom layers. Edges of the pad consist of 4- ft by 14-ft mats which finish off the bottom layer and eliminate overlapping seams. The company says the basic Uni-Mats also can be used to build five different road systems, depending on the terrain and load requirements. A three-ply solid road, for example, supported truck loads in excess of 2,400,000 lb recently during construction of a chemical plant.

Maintenance of the factory built pad modules is said to be minimal. Each cross runner board has a minimum of 26 nails, which are coated with epoxy glue, driven with pneumatic hammers, and clinched to make sure they stay put. Each 112-sq-ft mat, therefore, is put together with 150 permanent nails. On a standard, 3-ply location, this extrapolates to more than six nails per square foot as opposed to three or four nails per board on a conventional loose-board location. That means there's no need for crews to come in and nail loose boards back down after the drilling equipment has been installed. And, if any portion of a mat is damaged for one reason or another, the entire mat can be replaced quickly.



Prefabricated mats are said to be safer than loose boards during transport, as well as on site, because of their standard 14-ft length and because they eliminate hazards caused by protruding, left-over nails.

Removal of the entire pad also is quick. And it can be even faster than installation, because there's no need to stay square with the layout during removal. The company says pickup speed is limited only by the number of trucks available and the distance they have to travel to the next rig site. Quickest removal to date occurred with a 28,000-sq-ft location that was removed in 12 hours. As with installation, pickup requires only a forklift, a driver, and one or two laborers.

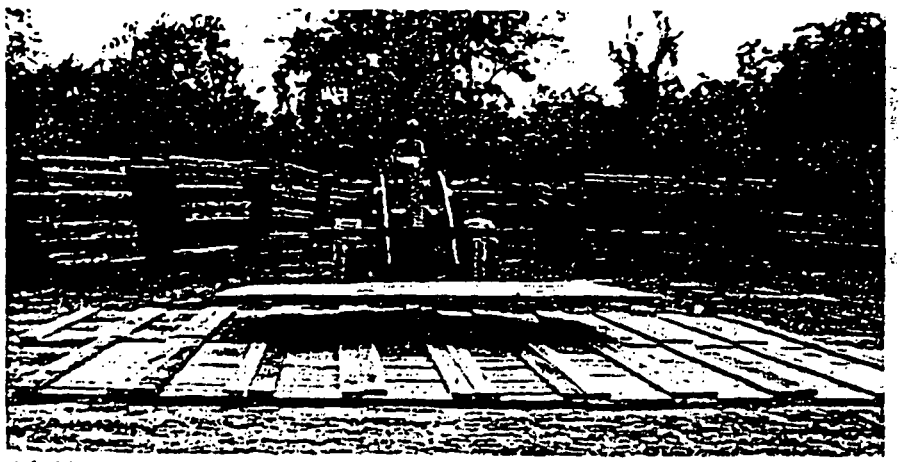
Because the mats measure 8 ft by 14 ft, they can be shipped by truck, rail, barge, or ship. And their stackability makes them easy to load and offload by forklift. A 40,000-sq-ft pad with a 1,000-ft access road requires 1,000 of the prefabricated mats. Each mat weighs approximately 1,200 lb and contains 468 board-ft of oak lumber.

Acceptance of the mat system by drilling contractors and operators reportedly is good, with comments ranging from "During the 57 days (on location) we never had to request a repair crew (on a location where the offset wells required nine to 12 layers of loose boards)" to "well satisfied with their ability to complete locations more quickly than was possible with loose lumber."

Another contractor went so far as to say, "This is almost as big a step as the drilling industry experienced when we went from steam rigs, on which each and every part had to be put together and taken apart on each well, to the unitized power rigs where major components were packaged and went together and rigged down much more speedily."

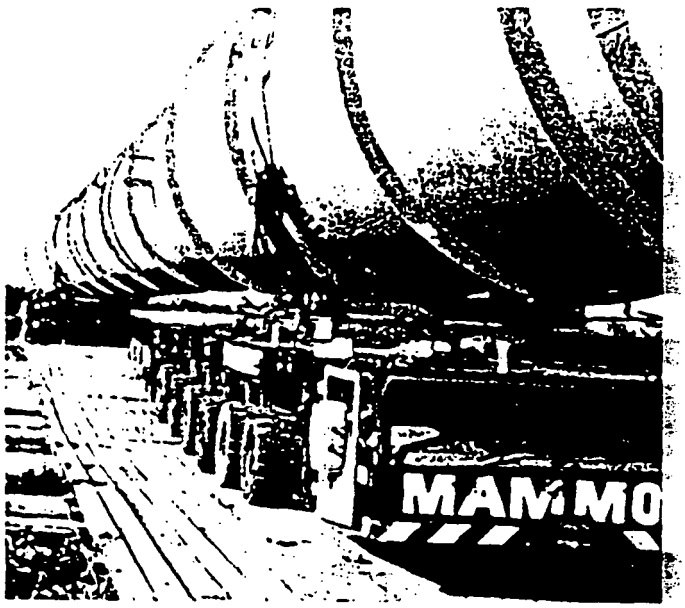
Landowners also are said to be favorably impressed with the Uni-Mat system because it uses only the surface area necessary for drilling the well, and only for a relatively short time. It then is removed cleanly and completely, with no broken boards or bent nails left.

Generally, a woven cloth or impermeable liner is placed on the leveled ground before the mats are interlocked into the rig pad dimensions. This method allows the pad to be constructed on top of the topsoil and avoids the type of soil disturbance that can upset the owner by decreasing his land's productivity.

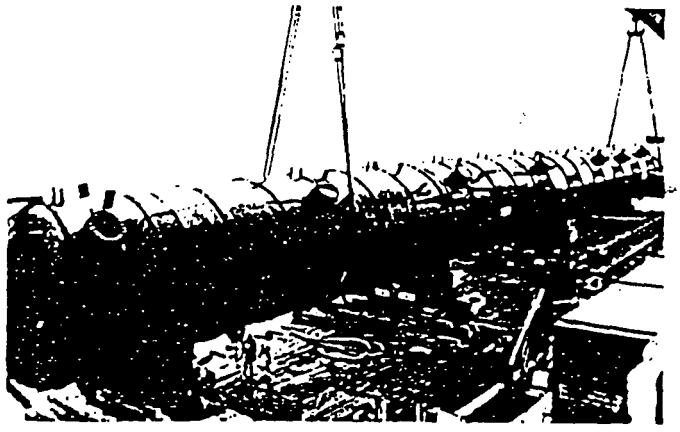


A forklift operator places a top mat over the intersection of four upside-down bottom mats as the first step in pad construction with the modular units.

INTERLOCKING OAK-MAT system provides load-bearing surface for dock and roadway (Fig. 1).



RECYCLE COLUMN AND TRANSPORTER shown being transported over mat system to Huntsman Chemical Co. plant (Fig. 2).



CONCENTRATED LOADS on barge deck, such as this 630-ton vessel, are dispersed by interlocking mat system (Fig. 3).

Temporary mat system supports heavy vessels

Moving large process-plant pressure vessels usually requires special handling facilities because of both the size and weight of the vessels. The extreme weight of many process vessels must be dispersed to avoid damage to docks, roadways, and ground surfaces.

Two vessel moves have demonstrated how a temporary mat system can be used to provide an adequate load-bearing surface for moving a vessel from fabricating facilities to final plant site.

Davenport/Mammoet, a heavy equipment transportation company in Rosharon, Tex., used a temporary mat system made by Uni-Mat International, Houston, to disperse the weight of a 150,000-ton recycle column for Huntsman Chemical Co., Corpus Christi, Tex.

The mat system consists of 8 ft × 14 ft interlocking mats of oak beams. Mats covered a 40 ft × 42 ft dock area for vessel unloading, and a 308 ft long roadway to transport the vessel to the plant access road (Fig. 1).

The mats spread the normal concentrated load of the multi-tired transporter vehicle of 120 psi per transporter tire to 5 psi at the existing grade (Fig. 2). Mats were also used to level low spots between the dock and plant access road.

Installation of the mats, covering a 7,280 sq ft area, took 4 hr, using one forklift truck and two workmen. Removing the mat system also took 4 hr.

Davenport/Mammoet also used the Uni-Mat system to provide decking on a barge to transport a 630-ton pressure vessel from a heavy-lift ship to an ethylene plant in Sulfur, La. (Fig. 3). The barge was needed because the ship could not negotiate the channel to the plant site.

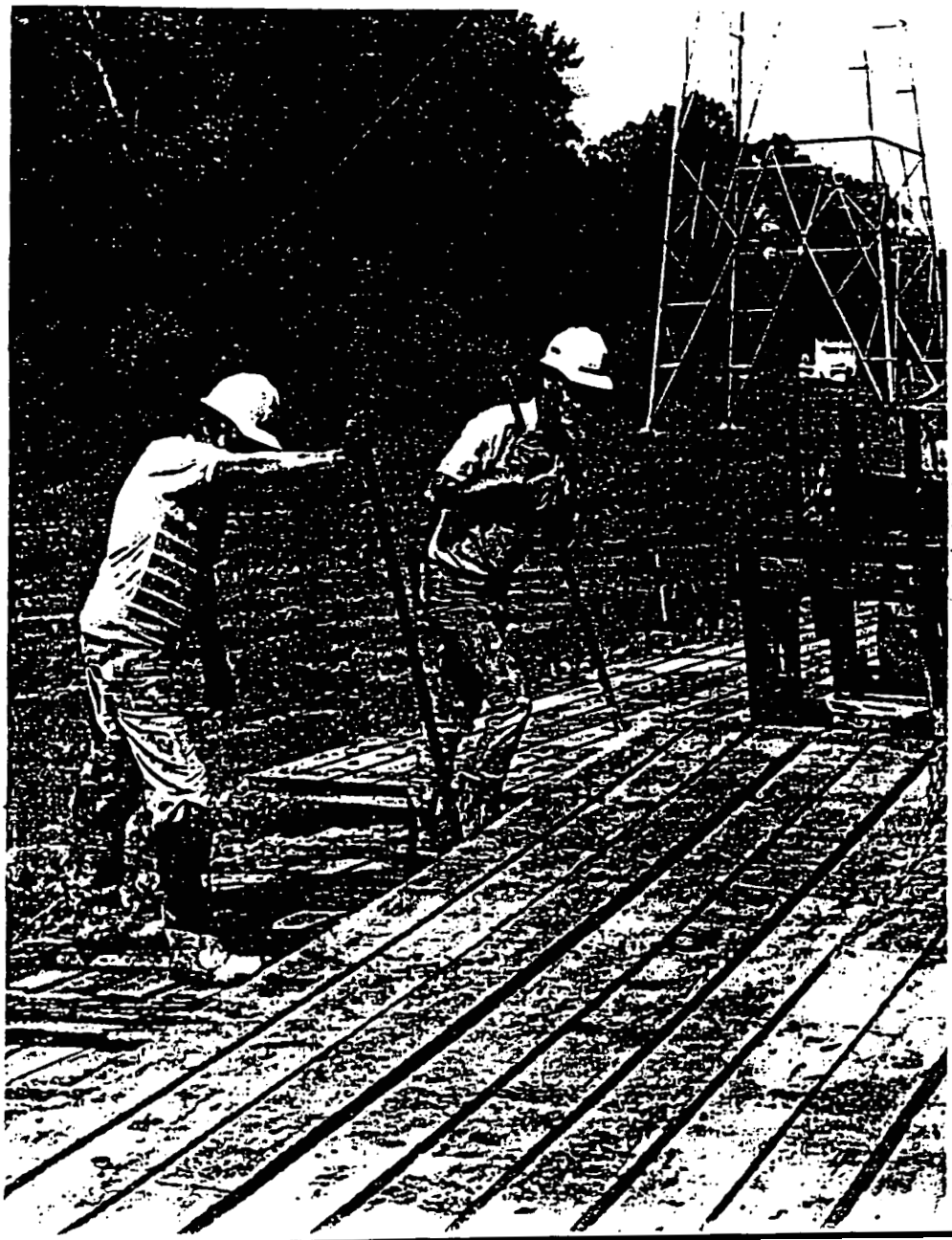
The deck space was about 40 ft wide × 180 ft long, and had to be covered to reduce concentrated loads on the steel deck. The total load on the barge included the vessel plus a 200 ton multi-tired transporter. Concentrated loads were reduced by 75% by using the mats.

Mats were also used to cross underground pipelines. The mats service all construction traffic into the plant, and they can handle loads up to 825,000 lb.

TEMPORARY ROADWAY ALLOWS REPAIRS TO ELECTRICAL TRANSMISSION TOWERS

This article explains how the Memphis Light, Gas & Water Division utilized a temporary construction roadway to save time and money.

By John Wineman



The Civil Engineering Area/Systems Engineering Department of the Memphis Light, Gas and Water Division (MLGW) of the City of Memphis, Tenn., was faced with the problem of providing access for heavy machinery in a wetland area to make repairs necessary to several electrical power transmission towers.

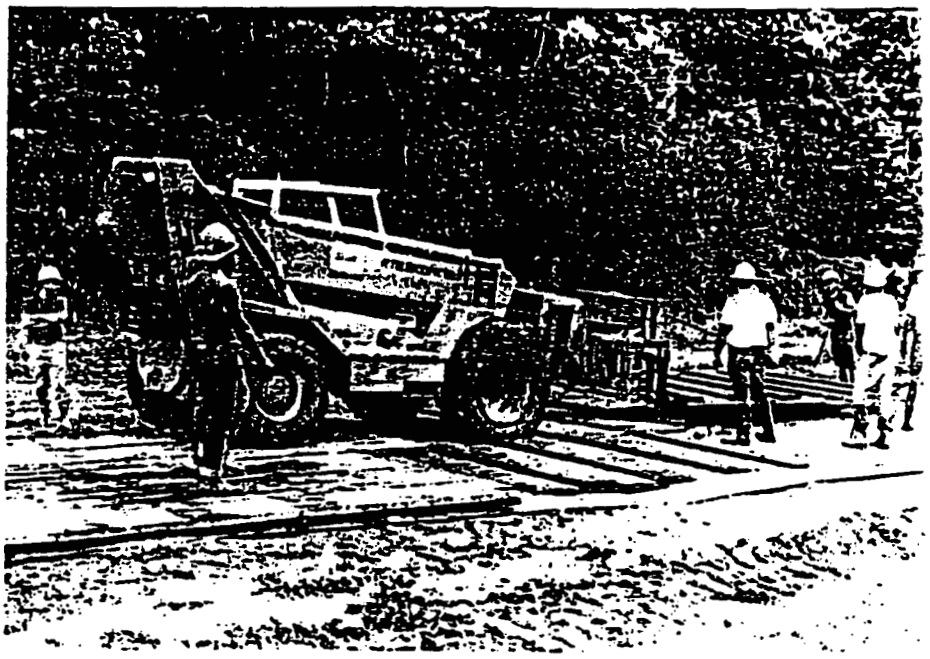
The problem area consisted of a Corps of Engineers permit wetland area in the basin of the Loosahatchie River within Memphis' City limits. The river channel had been diverted for the construction of the North Walkins Street Bridge.

Constant Erosion

The constant erosion of the new bank and the river wanting to seek its previous channel created a dangerous situation for the 161-kV transmission line that runs through the river basin. The erosion finally became so severe that one tower's footings were completely engulfed by the river and the tower collapsed.

Repairs to the tower were prevented because of the wet and boggy wetland that provides access to the power system. Many attempts were made with marsh track bulldozers but resulted in stuck vehicles and stranded personnel.

In one instance, MLGW could not get a heavy rental crane through the unstable soil in the old channel of the Loosahatchie River during a recent rainy period. Memphis, along with the rest of the Mid-South, experienced a



The temporary roadway is installed using an all-terrain forklift and pry bars.

very dry summer in 1988, then an over abundance of rain fell in the fall and continued into the winter of 1989. With these weather conditions, a high velocity runout on the Loosahatchie River, due to a low-water stage on the Mississippi River and the presence of silty clay bank material, created an abnormal rate and amount of bank erosion.

Different Approach Needed

Once the rains started, the Loosahatchie overflowed its banks several times, trapping at least three feet of water in the old river beds. MLGW used its bulldozer with 36-inch tracks to pull a rented 22-ton all-terrain crane through the old river bed to remove the conductors at the repair site. The crane almost overturned and the bulldozer started having a difficult time staying unstuck. MLGW knew that a different approach would have to be used to remove the collapsed tower from the bank and erect its replacement.

After battling the soft ground problems for several months and working with the Corp of Engineers on the sensitive nature of the wetlands, MLGW became aware of a flexible construction road and site system developed by Uni-Mat International to solve the access problem. The patented Uni-Mat system consists of 1-1/2 ply, 8-foot by 14-foot interlocking oak mats that have solid boards on one side and staggered boards on the other.

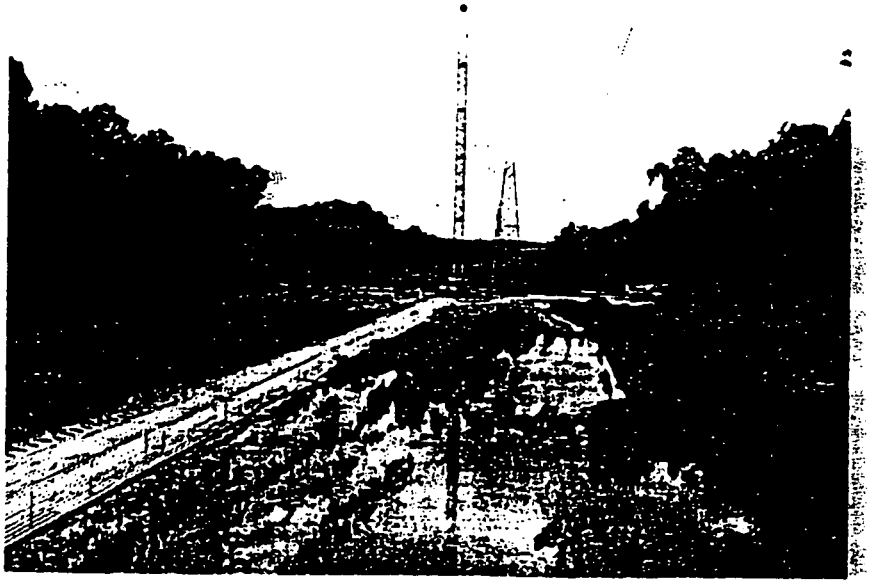
MLGW initially requested 128 mats to construct a 448-foot long by 14-foot wide road. The only equipment required

A foundation of woven geotextile is placed on the ground to prevent mud from rising to the top mats.

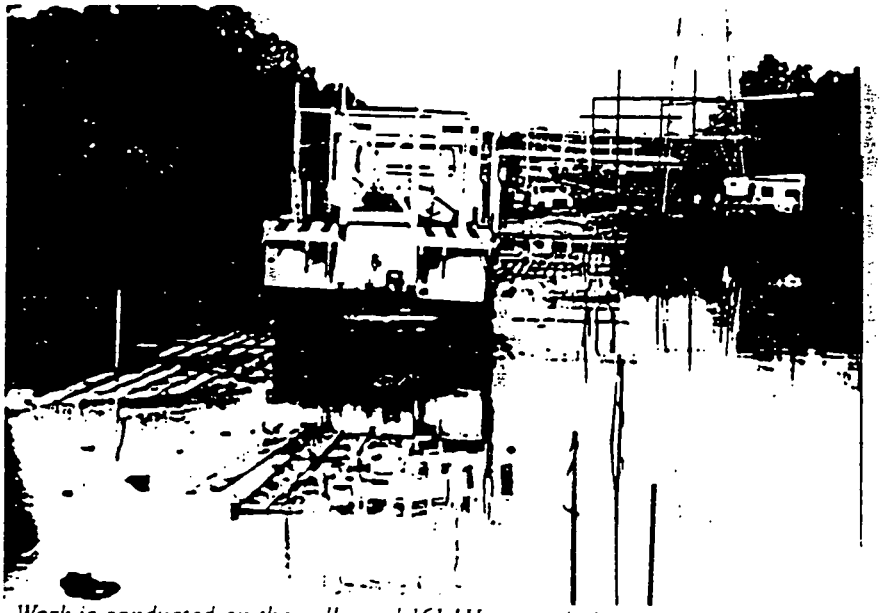
to install the road was a rented all-terrain forklift and pry bars. The layout of the road system was quite simple, and the installation time was limited only by delivery of the mats.

Laying The Roadway

Upon investigating the situation, the subject mats were laid in a roadway manner that interlocked each top mat



The wetland area in the basin of the Loosahatchie River.



Work is conducted on the collapsed 161-kV transmission tower.

The construction roadway system is able to support even the heaviest of machinery.

ROADWAY

[Continued from page 15]

onto a minimum of four bottom mats. Approval was then obtained to drain overflow water from the old river bed back into the Loosahatchie River and level the existing ruts so that the mats could be placed properly. The ground was so soft that the consulting engineer sank to his stomach while surveying the roadway and the majority of the roadway was laid during rainfall.

A foundation of woven geotextile was placed on the ground to prevent mud from rising to the top mats and making the road slippery. This was also done to reduce suction on the bottom mats.

Additionally, four mats were laid face down on the fabric to form a 16-foot wide base. The 12 14-foot boards of each mat were laid down and the 10 8-foot boards of each mat were up and aligned with its adjacent mat so that the top mats would interlock. A single mat was then placed on top of the road with the flat side up so that the notches of the top and bottom mats lock together to stabilize the whole setup. By placing one mat on top of four, a force applied to the mat is dispersed from 112-square-foot area to a 448-square-foot area.

Finally two mats were laid face up on the two-foot offset of the bottom four mats. All mats were offset to avoid any weak joints.

John Wineman is a transmission design engineer for Memphis Light, Gas & Water. Additional material was provided by the engineering department at Uni-Mat International, Inc., in Houston, Tex.

After Completion

After the roadway was complete, the repair equipment, including McKinney Drilling Company's 72,000-pound LDH foundation digging rig, crossed the roadway. Other pieces of equipment that traveled across the 448-foot road included a 70,000-pound bulldozer, concrete trucks and an 82-ton conventional Linkbelt truck crane that erected the top section of the tower.

After the tower construction and power line repairs are finished, the roadway will be deployed at a second installation that is in need of similar repairs where transport is virtually impossible because of the soft ground involved. MLGW also plans to use the roadway system as temporary pads for their industrial emergency generators and for protective workways across residential areas.

As in the case of the industrial emergency generators, the emergency power is often needed after or during severe wet weather. Ground conditions for support are often very poor because of no permanent foundation such as concrete pads are available for short use.

In the case of residential areas, providing a fast, safe, protective workway that is quick to install and remove improves public relations and lessens the work and time involved in serving residential clients. Many instances occur where repairs necessitate heavy equipment crossing customers' lawns or driveways that often get damaged because of the heavy loads involved.

John Wineman, transmission design engineer for MLGW, said the construction road system performed very well for them.

"Without the mats, MLGW could not have used conventional methods to restore this line," he said. "The roadway was under 6 to 12 inches of water on the Fourth of July. The next day equipment traveled across the road without any delays." **UTF**

9